AMENDMENTS

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In the Specification

Please edit the identified paragraphs by removing the stricken text ("---") and inserting the underlined text ("___").

[0006] Unlike~~,~~ refraction, ocular aberrometry provides greater details with reference to the refractive properties of the eye. In ocular aberrometry, the refractive properties of the eye are measured using various lenses and projections, typically sampling multiple points across the pupil rather than a single measurement as performed during refraction, thereby providing more detailed information on higher-order optical anomalies. The aberration information provided by ocular aberrometers is designated herein as "ocular wavefront error." Examples of ocular aberrometers and ocular aberrometry are disclosed in U.S. Patent Numbers 5,777,719, 6,095,651, and 6,511,180, which are incorporated herein by reference in their entireties.

[0008]In order to address these deficiencies, a technique known as visual aberrometry has been developed, in which the patient's preferred retinal plane is localized and the effects of the neurological pathways are taken into account by combining subject feedback with the physio-optical characteristics of the eye. The aggregate effect of the neurological pathway in combination with the characteristics of the eye is referred to herein as "neuro-ocular wavefront error" or "neuro-ocular wavefront data." Examples of visual aberrometers are described in greater detail in U.S. Patent Numbers ~~5,258,791,~~ 6,000,800~~,~~ and 6,099,125, which are incorporated herein by reference in their entireties.

[0052]FIG. 2 is a diagram illustrating an embodiment of a pupillometry image, which may be used in a refractometer adapted to acquire neuro-ocular wavefront data. An example of an aberrometer adapted

to acquire neuro-ocular wavefront data can be found in U.S. patent number ~~5,258,791~~ 6,000,800 (hereinafter, "the ~~'791~~ '800 patent"), ~~having the title "Spatially Resolved Objective Autorefractometer," filed on July 24, 1990, and issued on November 2, 1993,~~ which is incorporated herein by reference, as if set forth in its entirety. For simplicity, the ~~autorefractometer~~ visual refractometer of the ~~'791~~ '800 patent is also referred to as the "InterWave" refractometer.

[0054]In some embodiments, the pupil 210 is tracked using a first Purkinje image tracking method, which uses a camera and light source to compute the eye's orientation based on light reflections from the anterior surface of the cornea. Because the Purkinje tracking method does not depend on the pupil opening and closing concentrically about the eye's optic axis, the Purkinje tracking method is relatively accurate. However, the Purkinje tracking method often requires a stringently-controlled lighting environment to be able to detect the rear surface reflection off the eye's lens. For those embodiments that utilize the Purkinje tracking method, the pupillometry image also includes a location of the first Purkinje image (hereinafter, "the Purkinje location") 230, in addition to images from multiple eye-illumination light emitting diodes (LEDs) 240. While the Purkinje tracking method is specifically disclosed, it should be appreciated that other eye-tracking methods can be employed, as should be appreciated by those having skill in the art.

[0057] FIG. 6 is a diagram showing an example video display of a refractometer adapted to acquire neuro-ocular wavefront data. As shown in FIG. 6, the video display includes an eye display 610, which shows the pupil tracking box and the Purkinje location with reference to the x-y plane. Additionally, the video display comprises a sampling map 620, which shows the sampling points for acquiring the neuro-ocular wavefront data. Additionally, the video display includes an instrument control panel 630, which permits an operator to adjust various parameters associated with pupillometry. For example, for

embodiments that employ the Purkinje tracking method, the instrument control panel 630 can include a graphical interface for adjusting the Purkinje illumination. In some embodiments, the video display can further include an instrument status panel 640, which apprises the operator of whether or not the instrument is properly operating. Additionally, the video display can include a tracking control display 660, which can include various settings and measurements 650, such as, for example, the measured pupil diameter, the pupil position, and the Purkinje offset. While specific display parameters are shown in FIG. 6, it should be appreciated that the video display can be configured to include other parameters of interest to the operator. Examples of other display parameters are shown in FIG. 7.

[0149] As one can see from FIGS. 14 and 15, for some embodiments, the ~~refractometer~~ aberrometer that determines the neuro-ocular wavefront error can be configured in a variety of ways, thereby permitting greater accuracy in diagnosing and treating the visual system of a subject.